DNR-83-009-AK

STATE OF MINNESOTA
OFFICE OF ADMINISTRATIVE HEARINGS

FOR THE DEPARTMENT OF NATURAL RESOURCES

In the Matter of the Establishment of Protected Flows on a Portion of the Clearwater River Limiting Water Appropriations During Low Flows.

FINDINGS OF FACT, CONCLUSIONS, RECOMMENDATION AND MEMORANDUM

The above-entitled matter came on for hearing before Allan W. Klein, Hearing Examiner, on June 7, 1983, in Bemidji, Minnesota. The hearing continued on June 8, 9, and 10 in Bemidji. It then continued on June 30 and 31 in Minneapolis.

There were two parties to the case. The Department of Natural Resources, (hereinafter "Department") was represented bv Special Assistant Attorney General A. W. Clapp, III, Box 38, Centennial Office Building, St. Paul, Minnesota 55155. The other party was a group of wild rice growers holding permits from the Department (hereinafter "Wild Rice Growers"). It consisted of Clearwater Rice, Inc., Gully Farms, North Star Enterprises, Inc., Lake Land
Wild Rice, Gunvalson Brothers, Gunvalson and Imle, Pay C. Skoe, Duane Erickson, Truman Sandland, Mike Molden, Don Molden, Ken Gunvalson, John Gunvalson, Warren Bardwell, Paul Imle, Oscar E. Thorbeck and John T. Sandland. The group was represented by Vance K. Opperman and Mary Ambler Lany, Attorneys at Law, Opperman & Paquin, 2200 Washington Square, 100 Washington Avenue South, Minneapolis, Minnesota 55401.

The record closed on November 2, 1983, upon receipt of the final material submitted.

Notice is hereby given that, pursuant to Minn. Stat. 14.61 (1982) the final decision of the Commissioner shall not be made until this Report has been made available to the parties to the proceeding for at least ten days, and an opportunity has been afforded to each party adversely affected to file exceptions and present argument to the Commissioner. Exceptions to this Report, if any, shall be filed with the Commissioner of Natural Resources, Centennial Office Building, St. Paul, Minnesota 55155.

STATEMENT OF ISSUES

Should the permits issued to wild rice growers appropriating water from the Clearwater River be amended to included a protected flow? If so, what should that flow be, and what conditions should be attached to its use?

Based upon all of the proceedings herein, the Hearing Examiner makes the following:

FINDINGS OF FACT

JURISDICTION.

1. On March 7, 1983, the Commissioner of Natural Resources issued his Order and Notice of Hearing in this matter. It was mailed to the Wild Rice Growers and other permittees, as well as to others, on March 11, 1983. (Joint
Ex.2).

2. On March 28, 1983, notice was published in the EQB Monitor at page 102. (Joint Ex.3).

3. On April 7, 1983, and again on April 14, 1983, notice was published in both the oklee Herald and the Gonvick Leader-Record. (Joint Exs. 4 and 5).

4. The notices enumerated above announced that the hearing would begin on May 10, 1983. Pursuant to agreement of the parties, the hearing was continued to June 7, 1983. No person was prejudiced by this continuance.

5. The Clearwater River is both a "natural water course" and an "altered natural water course" as those terms are used in Minn. Stat. 105.37 (1982).

6. Tie total drainage area of the Clearwater River at Plummer is 512 square miles. (DER Ex. 1, p.3). It therefore constitutes "public waters" as that term is used in Minn. Stat. 105.37 (1982).

DESCRIPTION OF THE RIVER AND ADJOINING LANDS.

7. The Clearwater River is approximately 146 miles long (DER Ex. 28, p.11). It flows through the Counties of Clearwater, Polk, Pennington, Beltrami and Fed Lake. (Tr. I, p. 44 and 93).

8. The river can be divided, for purposes of this Report, into two major portions. Those are the portion above the dam at Clearwater Lake, and the portion below the dam. The only portion of interest in this proceeding is the portion below the dam.

9. The river flows from east to west. Going from east to west, towns which were used as points of reference in the record include Clearbrook, Gonvick, Gully, Trail, Oklee, Plummer, Terrebonne, and Red Lake Falls. (DNR Ex. 5).

10. 'The mouth of the river is located at Red Lake Falls, where it joins the Red Lake River. The Pei Lake River flows further to the west, ultimately Joining the Red River of the North.

11. During the 1950's, the Clearwater River was substantially altered by dredging (DNR Ex. 1, p.3 and Tr. III, p. 54). The stretch of the river of interest (the stretch below the dam) can be thought of as divided into three parts: the stretch east of the dredging, the dredged portion itself, and the stretch west of the dredging. While the two areas on either side of the dredged portion are not equal in length, the dredged portion can be thought of, conceptually, as the middle portion of the area of interest.

12. Wild rice agriculture presently takes place in the stretch east of the dredged section, along the dredged section itself, and immediately west of the dredged section. (DNR Ex. 5).

13. Public fishing takes place primarily at three points. First of all, immediately below the Clearwater Lake Cam at the eastern most end of the area of interest. Secondly, fishing takes place in and around the town of Plummer,

which is well to the west of the dredged section and well to the west of any
wild ricing operations. Finally, fishing takes place in and around Red Lake
Falls, which is at the western most end of the area of interest and
substantially west of any wild rice operation.

14. 'The ''Plummer gauge" is a water level measuring device located downstream (west of) the wild rice paddies. It is located near the Town of Plummer. Daily flow figures at the gauge are available for virtually the entire period from September, 1939 to October, 1979. The gauge was officially

shut down between October, 1979, and October, 1982, but informal measurements were still taken. From October, 1982, to date, the gauge has been officially reactivated. (Tr. I, pp. 136 and 144).

WILD RICE AGRICULTURE.

15. Wild rice agriculture began along the Clearwater River in 1968, but (lid not expand to its current size until the mid 1970's. It is thus a very young industry in this location. Almost all of the Clearwater growers had little or no experience growing wild rice prior to their work on the Clearwater.

16. As the growers gained experience with wild rice, their farming practices changed and have become more uniform. in particular, the amount of water used to grow wild rice is now agreed upon as being, in an average year, 30 inches, or 2.5 feet. However, this varies from year to year and from farm to farm, based upon runoff capture, evaporation, rainfall and seepage. Nonetheless, 30 inches is a good working number.

17. 'This 30-inch average obscures, however, the question of timing. It makes a tremendous difference, for purposes of this proceeding, whether 20 inches are taken in April and 10 inches in June, or vice versa.

18. The two critical months, for the Clearwater River, are May and June.

19. The growers fill their paddies to an average depth of 12 inches of standing water by May 15. They then maintain that 12-inch depth until June 30. Evaporation and seepage require "make-up" pumping during late May and throughout June. The exact amount of ''make-up'' pumping varies with the climate and other factors, but averages six inches.

20. The initial filling requires more water today than it did during the early 1970's. This is because of changed farming practices. In the early 1970's, the paddies were harvested in a much wetter condition than they are today. This was due, in part, to the growers intentional practices, but mostly it was due to a lack of tiling and ditching. The installation of tiles and drainage ditches has allowed the growers to draw down their paddies to a far drier state, and they now use harvesting machinery that would not have been possible in the earlier, wetter years.

The impact of this change, however, is to require more water in the spring than was true in past years. The growers now appropriate an average of 23.2 acre-inches of water per acre to initially fill their paddies. Generally, this translates into about 12 inches to fill the ditches and saturate the soil, and another 12 inches above the ground.

21. If the growers have 12 inches of standing water on June 30, there is no need for them to pump after that date. in order to make the paddies dry enough to harvest, the growers allow the water level to gradually recede during July and August. If climatic conditions warrant, the growers will hasten the draw-down by opening up drainage ditches that run into the river.

WATERFOWL AND WILD LIFE

22. Assuming that the growers begin their spring filling at or soon after the "spring breakup", the paddies have at least some water in them by the time of the spring waterfowl migration.

23. The flooded wild rice paddies transform the land into an almost ideal waterfowl management area. During the late spring, summer and early fall, the wild rice paddies are equal to, if not better than, Department-managed wildlife areas in terms of waterfowl breeding and usage. Details of the usage (and comparisons with other wildlife management areas) can be found in WRG Ex. 10 and WRG Ex. 11, two studies supervised by Professor Patrick Trihey of Bemidji State. (See also, Tr. IV, pp. 5-14). Although the size of the paddies ranges from ten acres to 200 acres, the average is approximately 40 acres.

24. The attractiveness of the paddies for ducks is heightened by their setting. They are near the 7000-acre Ki-wo-say impoundment, specifically constructed for waterfowl production. They are also near the 4000-acre Sah-geeng Impoundment (WRG Ex. 15, p. 6).

25. The waterfowl using the paddies include ducks, geese, swans, shore birds, pelicans, cranes, and egrets. (WRG Ex. 15, pp. 3 and 4). The ducks actually nesting in the paddies include teal, pintail, wood duck, ring-tailed, redhead and mallards. Whistler swans frequent the area (Tr. III, p. 193). WRG Ex. 23-1 through 23-14 are photographs taken on the paddies in May of 1983. They show ducks and geese on the paddies, and WRG Ex. 23-1 shows a substantial number of ducks in the air. (See also, Tr. V, p. 115).

26. Wildlife also use the paddies, and their productivity has been favorably compared with a nearby wildlife management area (Tr. II, p. 42). Muskrats, mink, fox, deer, bear, beaver, coyote, and wolf have all been seen on the paddies. (Tr. II, p. 43; Tr. TV, p. 80). Commercial trappers use the area to trap mink and muskrats. (Tr. V, p. 117).

27. A pair of bald eagles has been seen regularly (several times weekly) over the paddies, but their nesting place is unknown. (Tr. IV, p. 105; WRG Ex. 15, P. 4). Wilson's snipe are also found in the area (Tr. II, p. 43).

29. Unusual birds seen in the paddies include willet, Hudsonian godwit, long-billed curlew, avocet, sandpipers, and yellow-legs. (Tr. IV, p. 81).

29. Hunting on the paddies, especially for waterfowl, is described as excellent. (Tr. II, pp. 41 and 56). During the hunting season, water remains in the ditches, and fallen wild rice in the paddies. These features attract and retain waterfowl. (Tr. II, p. 9).

30. Persons come from near and far to observe the waterfowl. School tours are conducted along the paddies. A widely published wildlife writer (Who has served on the Governor's Advisory Board for Natural Resources) regularly leads tours of the paddies, including observers from other states and countries (WRG. Ex. 17; Tr. IV, pp. 100-104).

31. The growers do not erect devices to keep the waterfowl away. (Tr. II, p. 46). In fact, they welcome them, particularly in the fall when they eat the fallen seed, thereby thinning the otherwise overly dense crop that would come the next year. At least one of the growers has put out platforms for geese and woodduck houses (Tr. IV, p. 106).

32. Persons whose testimony made a direct comparison of the value of the river for fishing versus the value of the paddies for hunting, universally

favored the hunting value over the fishing value. (Tr. II, pp. 7, 37, and 57).

33. In terms of sheer numbers, the paddies produce far more ducks than the river produces game fish. One credible estimate, based on studies, put the difference at 32 pounds of duck produced for every one pound of fish produced. (WRG Ex. 26).

FLOOD CONTROL BENEFITS.

34. Northwestern Minnesota frequently experiences severe damage due to floods, particularly in the spring. (Tr. III, p. 14). the Clearwater River flows into the Red Lake River at Thief River Falls. The Red Lake runs through Crookston to East Grand Forks, Where it flows into the Red River of the North. (Id). The flooding problems occur along the paths of the Red Lake River and the Bed River of the North. However, there are four rivers which are primarily responsible for this flooding. They are the Thief River, the Red Lake River, the Black River and the Clearwater River. The record does not indicate the percentage contribution of the Clearwater to the Red River of the North, but it must be relatively small. For example, the percentage of water in the Red Lake River at Red Lake Falls, which is attributable to the Clearwater River, has been calculated. In March, it is 52 percent from tne Clearwater. In April, 48 percent. In May, it is 54 percent. (DNR Ex. 16). The percentages in the Red River of the North would be even smaller. Nevertheless, the overall impact of wild rice agriculture on the Clearwater River is to reduce downstream flooding because of the appropriations of the growers in the springtime.

35. Approximately five years ago, the Red Lake Watershed District joined with other watershed districts along the Red River of the North to attempt a coordinated attack on flood control. The major thrust of this attack has been the construction of upstream floodwater impoundments. In the Red Lake Watershed District's jurisdiction alone, it is estimated that 200,000 acre-feet of impoundments are needed. To date the District has created 6,000 acre-feet, at a cost ranging between $50.00 per acre-foot to $1,000.00 per acre-foot. The District's engineer estimated that the growers, by impounding 20,000 acre-feet, have saved the District between six and eight million dollars in construction costs alone. (Tr. III, p. 164). That figure does not include ongoing maintenance costs which the District incurs in its other impoundments. (Id). This storage is at no charge to the District, and constitutes ten percent of its storage needs. (Id).

36. Wild rice agriculture has other, related, benefits beyond its immediate vicinity. Summer river flows are augmented by seepage, and fall

flows are augmented by releases. On the other hand, both spring and early
summer flows are reduced by pumping. (Tr. III, p. 165).

37. Maximizing appropriations during flood times was one of the Department's goals in setting the protected flows. (Tr. I, p. 33). The Department does not contest the value of wild rice appropriation for flood control, labeling it a "significant impact ... on peak flood flows" (Bloomgren
Tr. I, p. 177).

FISHING AND THE FISHERY.

38. Prior to the dredging in the 1950's, fishing on the Clearwater River
was good (Tr. II, p. 65). It was possible to catch a limit of walleyes in the

river. (Tr. II, p. 63). During One great drought of the 1930's, the river went dry for as long as a month at a time (1935), and there were no fish to be had for years thereafter. (Tr. II, p. 32).

39. Little is known about the actual use of the river for fishing during the 1970's. One of the growers, who has been on his land (along the dredged section) fairly consistently since 1968, has never seen people fishing near his paddies (Tr. IV, p. 101). However, DNR did receive complaints about the fishing in 1977, which was a low water year. (Tr. III, p. 48). Affidavits circulated in the Bel Lake Falls and Plummer areas asked people to list the types of fish that they fished for in the Clearwater River. forty-one persons listed walleye, 34 listed northern pike, 17 listed suckers, 12 listed rock bass, six listed catfish, five listed "game fish", and seven listed "any kind''. (Public Exs. 2 and 3).

40. DNR received complaints about low water in 1981 (Tr. III, p. 48), and one person listed 1981 as the dividing line between good fishing and no fishing. (Tr. II, p. 63). 1981 was, in fact, a very low flow year, and one person reported he could cross the river at Plummer without getting his shoes wet (Tr. II, p. 32). It was also reported that dead walleye were seen floating, belly-up, past the houses in Plummer. (Tr. II, p. 67).

41. Although 1983 was reported to be a good year for fishing south of Plummer (Tr. II, p. 53), the fishing usage indicated by informal inspections has been sparse. For example, on opening day of 1983, a check of 15 locations between Oklee and Red Lake Falls yielded a count of only 10 people who were fishing (Tr. V, pp. 22-23). A second trip on Memorial Day to six places between Plummer and Terrebonne yielded only three people fishing. (Tr. V, p. 39). During July, four more inspection trips were made between Oklee and Terrebonne, yielding no people fishing (Tr. VIII, p. 155). These results, however, do not include the commonly used fishing area immediately below the dam at Clearwater Late. One person who reported fishing the river indicated that he fishes from the dam down to the beginning of the dredged area (Tr. IV, p. 67). Those areas are not included in the areas inspected. There are no Departmental creel counts, aerial counts, or other numerical indicia of fishing (Tr. III, pp. 71-73). Many of the people Who do fish the Clearwater also fish other lakes in the area, and thus they would not necessarily be found on the Clearwater during any single inspection or census count.

42. The Department has done three surveys on different parts of the river since 1979. A composite of all three surverys indicates that approximately 92 percent of the fish identified were rough fish, such as fresh-water drum (sheepshead), redhorse, carp and stickleback. (Tr. III, p. 34 and DNR AK. 22). Suckers were also included in that percentage, although there was some

debate about whether or not they were truly "rough fish" (Tr. III, p. 64 and
Tr. II, p. 54).

43. The game fish surveyed included walleye, northern pike and channel catfish. Where these fish came from was a matter of some discussion because
of the substantial distances involved between the area of ricing operation and
the two fishing areas of Plummer and Bel Lake Falls. There have never been any fish tagging studies done on the river to definitively establish whether

or not the dredged channel serves as a route of migration for fish. The habitat in the dredged channel is so poor that it does not serve as a spawning or rearing area itself. However, walleye in particular are found below the Clearwater Lake dam, at the far eastern end of the River. Do they come from the Plummer area, all the way up the channel? Do they come over the top of the dam from Clearwater Lake (a well-known walleye lake)? Or do they enter the river at some point between the dam and the dredged portion of the channel? Without an adequate tagging study, or similar investigation, it cannot be said with certainty where those fish come from. However, it is more likely than not that at least some of them come from Johnson Lake.

44. Johnson take is located near the eastern end of the river, between the dam and the ricing operations. It is connected to the Clearwater River by an intermittent creek. Johnson Lake is so prolific that the Clearbrook Sportman's Club used to trap northerns there to obtain eggs for use elsewhere (Tr. IV, p. 179). While the intermittent nature of the connecting stream, and the existence of numerous beaver dams along its course, throw some question on 'Johnson like as the source, and while a definitive test would be necessary before establishing it with certainty, it is found that at least some of the walleyes below the dam do come from Johnson Lake (Tr. IV, pp. 174-176, 184; Tr. IV, pp. 59, 65, 107, 172, 209, 211, and 227-228). Another possibility is that fish go over the dam, especially in the springtime (Tr. IV, p. 176). A final possibility is that they do migrate through the dredged portion up to the dam (Tr. III, p. 175). While there is no documentation of a spawning run of walleyes in the river (Tr. III, p. 65), it is known that they do "run" up the river in the Red Lake Falls area (Tr. II, p. 14). There has always been a natural population of walleyes in the river, and the Department has never stocked it. (Tr. VI, p. 80). Walleyes have been known to migrate an average of 25 miles on the Mississippi River, with a maximum length of 38 miles. (Tr. VI, p. 85). In May of 1983, the Department used a fine mesh drift net in the river, approximately three miles southwest of Plummer. Of the 335 larval fish identified, 85 were walleyes and 250 were White suckers (Tr. VI, pp. 80-81).

45. Regardless of the source of the fish below the dam, it is found that

the appropriations by the growers are reasonably related to the amount of water in the river at Plummer and Red Lake Falls so that it is reasonable to consider the fishing in the river when evaluating the growers' appropriations. While separated geographically, the growers and the fishing spots are connected hydrologically. The fact that they are separated by the dredged channel does not negate the impact of the appropriations on the fishery. of course, the appropriators have no impact on what goes on upstream, so that to the extent that fish below dam come from either Johnson Lake or Clearwater Lake, the growers do not impact that fishing spot. However, to the extent that the fish do migrate up the dredged channel, the growers would impact their migration by affecting the water levels in the dredged channel.

46. ' There are a number of reasons why the amount of water in the river impacts upon the quality of the fishery. The critical time, for purposes of this proceeding, is the spring spawning period, which runs from early April to

June. During this period, stable flows are required at levels sufficient to keep the eggs covered with water and supplied with adequate amounts of oxygen. (Tr. III, p. 50.). The reason the Department initially selected the protected flows of 72 CFS and 36 CFS was to protect the fishery resource (Tr. I, p. 168). Bit if protecting the fishery resource had been the only consideration in setting the protected flows, they would have been set higher. For example, the initial input from Departmental fishery personnel suggested that the median monthly flows be set as the protected flows. This would have been a flow of 556 CFS in April, 315 CFS in May and 182 CFS in June. (See, Memorandum dated December 23, 1981, from Larry Seymour to Jerry Kuehn). At the time that this recommendation was made, the fishery personnel had, fresh in their minds, the complaints arising from the low flows in the spring of 198I. (See, Memorandum dated June 4, 1982, from Joe Geis to Pat Bloomgren). In fact, the Montana method selected for calculating protected flows was modified in order to take into account the concerns of the fishery personnel for low dissolved oxygen in March (tr. VI, p. 67 and Tr. VIII, pp. 91-93).

THE CONCEPT OF PROTECTED FLOWS.

47. In 1977, the legislature directed the Commissioner to limit water appropriation permits "so that consumptive approriations are not made ... during periods of specified low flows in order to safeguard water availability for instream uses Minn. Stat 105.417 (subd.2).

48. The Commissioner, in 1980, adopted rules defining a "protected flow" as that flow necessary to accommodate instream uses, such as recreation, navigation, aesthetics, and fish and wildlife habitat. 6 MCAR 1.5050.

49. Although the concept of a protected flow to protect instream uses is a relatively new development in Minnesota law, it has been of concern for decades in other states (principally in the West) where demand for water has often outstripped supply. (Tr. VI, p. 37). A 1975 national study included federal funding to examine instream flow requirements (DNR Ex. 30, p. 1) and evaluate various methods for setting protected flows. In 1978, a Presidential Message called attention to the "...need to improve the protection of instream flows...". (DNR Ex. 35, p. i).

50. In 1978, following the enactment of the 1977 statute, the Minnesota Water Planning Board issued a draft interim report on instream flow needs in Minnesota. (DNR Ex. 29). Shortly thereafter, the Upper Mississippi Basin Commission sponsored a symposium on instream flow management (DNR Ex. 35).

51. For the Clearwater River, the potential for water use conflicts and the potential impact on instream flows was recognized before any of the above events occurred. In addition to limitations on permits issued from 1968 onwards (see subsequent section), the Department, in 1974, hired Parr Engineering to study the impact of existing and future wild ricing demands on available water in the river. The so-callel "1975 Barr Report" (DNR Ex. 1) Aid not recommend that any particular protected flow be established, but noted that an "adequate" flow should be maintained for fish and wilflife. (DNR Ex. 1, pp. 11-15). The report did not focus on the protected flows; rather, it

focused on overall water availability for wild ricing. It did not, for example, contain any substantial discussion of the factors (recreation, aesthetics, fish habitat, etc.) now recognized as criteria for setting protected flows, except for dilution of waste water.

HISTORY OF WILD RICE APPROPRIATION PERMITS.

52. The first permit for appropriation for wild rice agriculture was issued in 1968. It contained no mention of a protected flow. However, it did contain a provision permitting the Commissioner to review the permit from time to tine as additional hydrological data became available, and to amend the permit if he determined that the appropriation "is detrimental to the public interest". (DNR Ex. 21, Permit 68-1358S). This provision has been consistently included in all permits from 1968 to the present.

53. In 1971, the same permit holder obtained a new and separate permit (DNR Ex. 21, Permit 71-6595), Which included a new provision, stating that when sufficient data became available, the Department may require that pumping be curtailed "during periods of low water to maintain a desirable minimum flow in One stream below the pumping point". This provision has also been consistently included in permits issued from that date forward.

54. While a review of the permits indicates a few sporadic efforts at dealing with the protection of a minimum flow, it has been these two provisions which have dealt with the issue from the standpoint of the written permits themselves.

55. 1981 proved to be a very dry year. None of the growers was satisfied with the amount of water available for pumping. For example, one would have liked to have flooded 1,800 acres, but ended up with only 400. (Tr. IV, p. 147). The overall lack of water, plus a dam placed in the river by one of the growers, resulted in a resumption of regulatory attention to the supply-demand problem on the Clearwater. (Tr. I, p. 27). In April, DNR personnel met with the growers to discuss these problems. Thereafter, the growers worked among themselves to develop an allocation plan. The Department also began to formulate its thoughts on the establishment of a protected flow. In May, personnel from the Division of Waters inquired of Fisheries' personnel regarding their thoughts on an appropriate protected flow. (DNR Ex. 3).

56. Sometime during the summer of 1981 the Department began considering using the Tennant method (or Montana method) for setting a protected flow for the Clearwater. By September, at least some persons in the Department had focused on this method. (Tr. I, p. 160). The flows, which would result from the application of the Tennant method, would be 72 CFS in the spring and summer, and 36 CFS in the fall and winter.

57. Fisheries' personnel inititially favored protected flows higher than 72 and 36. They first proposed that the median monthly flows at the Plummer

gauge be the starting point for negotiating with the growers. But Division of Waters personnel thought that this was too restrictive for the growers. They also felt that they would have a hard time defending such figures. In a Memorandum dated December 23, the Division of Waters personnel officially

suggested 72 and 36 to the Fisheries' personnel. The Fisheries' personnel reluctantly accepted those numbers, but urged that the protected flow change from 36 to 72 on March 1, rather than April I (which would occur if the Tennant method were strictly followed).

58. At the same time that the Department was internally debating protected flows, the growers were working on a proposal for self regulation. on January 13, 1982, Department personnel met with the growers in Bemidji and agreed to the general concept of self-regulation. On January 25, the growers submitted a proposal for a Growers' Association to the Department.

59. (On February 18, 1982, the Department sent the growers a draft of tentative amendments to the permits Which the Department was considering. Included in the amendments was a protected flow of 72 CFS for the period of March through September, and 36 CFS for October through February.

60. Soon thereafter, the growers requested a one-year delay in the effective date of the amendments. The Department responded by agreeing to delay their effectiveness until November 1. One of the reasons for the growers' requested delay was that they believed that 72 CFS was too restrictive. They induced the Red Lake Watershed District to urge the Department to impose 25 CFS as an interim step. The Department responded to this proposal by asking the Watershed District to submit any data it could to support the reasonableness of 25 CFS. At the same time, the Division of Waters personnel told Fisheries' personnel that if the Department was to support 72 CFS, there was a need for documentation of the impact on fisheries of a lower number. The Fisheries' personnel responded by saying that 25 CFS was too low, and that they favored 72 CFS as an interim measure until a more complete study could be made. (Dept.Ex. 3).

61. In June the growers submitted a tentative plan to the Department. The plan covered a number of issues and attempted to deal with the protected flow by stating that 72 CFS would be set as a "preferred flow" during the spring and summer, but that the growers would be able to continue to pump until the river reached 25 CFS. So under the growers' proposal, 25 CFS would he the protected flow.

62. For reasons not germane to this report, the Growers Association began experiencing internal dissent. Up to this point, the Department had been dealing with the Association on the basis that various disagreements could be worked out and that a locally directed self-regulatory system could be adopted. With the coming of the internal dissent, however, the Department began to focus on the need for a departmentally-operated system. In September the Department replied to the growers proposed plan. The Department was willing to consider a compromise that established the protected flows at 72 and 36 for normal years, but in drought years, the Department would "share the scarcity" by lowering the protected flow from 72 to 36 CFS.

63. The growers were unable to resolve their internal differences, and at a meeting in December attended by departmental personnel, they decided to dismantle their Association.

64. On January 20, 1983, the Department formally advised the growers that it was amending their permits. The amended permits contained the Department's

"compromise" of 72 and 36 in normal years, but "when the commissioner determines that drought conditions are likely to prevail, the summer protected flow shall be set at 36 CFS".

65. On February 7, a formal appeal was filed by most of the growers. They appealed both the protected flow proposal and a proposal that allocation of water among growers begin when the river goes below 400 CFS. It was later stipulated that the allocation method was at issue. This hearing is a result of that appeal.

METHODS OF SELECTING PROTECTED FLOWS.

66. Since 1977, the Department has established protected flows on 39 rivers. (Tr. III, p. 185). Between 1977 and 1980, the procedure for setting protected flows was to look only at historical flows, and set the protected flow equal to 10 percent of the average annual flow. Personnel responsible for setting flows using this method did not solicit, or receive, any input from Fisheries' personnel (Id.). This method proved inadequate when applied to the south branch of the Buffalo River near Sabin, because it did not prevent a fish kill. (Tr. III, p. 186).

67. The Tennant method, or Montana method, has been used on three Minnesota rivers besides the Clearwater. It has been used on the Vermillion River, the Blue Earth River and the Roseau River. (Tr. III, p. 187, and Tr. VI, p. 62).

68. The Tennant method was developed by Mr. Don Tennant of the U. S. Fish and Wildlife Service. Based upon his work in Ohio, New England, Nebraska, Montana and Wyoming, Tennant observed a reliable and consistent correlation between the percentage of average flow in a stream and the welfare of the aquatic habitat in that stream. In other words, based upon observations of hundreds of streams, Tennant has been able to create a system of generalizations which can be applied with equal validity to all streams. He does not dispute the value of an extremely detailed examination of a strewn which would yield greater precision than would his method. But cognizant of the time and expense required for such a detailed evaluation, his method allows for quick and easy determination of rough calculations of instream flow needs.

69. The Tennant method is a fixed percentage method. It requires only a knowledge of the average annual flow of the stream, and a selection of a level of quality which the protected flow should yield. His method can be set forth on a three inch by five inch card. While the entire chart will not be reproduced here, it can be found in DNR Ex. 29, at p. 4. The table yields percentages of average annual flow for April-September and October-March. If,

for example, the goal is to maintain an "outstanding" flow, the protected flow should be set at 60 percent of average annual flow for the summer, and 40 percent for the winter. If the goal is an "excellent" flow, it would be 50 percent and 30 percent. If the goal is a "good" flow, it would be 40 percent and 20 percent. If the goal is a "fair" flow, it would be 30 percent and 10 percent.

70. In the case of the Clearwater, the Department's Fisheries' personnel initially favored using median monthly flows, but were willing to "compromise"

on the figures resulting from the application of the Tennant method, so long as the protection was to be rated at the "good" level, and not below. (DNR Ex. 3). Their reasoning was that the fish population in the Clearwater, while admittedly not outstanding, was similar to that of other warm water rivers in the State. It was not noor. (Tr. VI, p. 66). Tennant himself describes this good" regime as follows:

> This is a base flow recommended to sustain good survival habitat for most aquatic life forms. Widths, depths and velocities will generally be satisfactory. The majority of the substrate will be covered with water, except for very wide, shallow riffle or shoal areas. Most side channels will carry some water. Gravel bars will be partially covered with water, and many islands will provide wildlife nesting, denning, nursery and refuge habitat. Stream banks will provide cover for fish and wildlife denning habitat in many reaches. Many runs and most pools will be deep enough to serve as cover for fishes. Riparian vegetation will not suffer from lack of water. Large fish can move over riffle areas. Water temperatures are not expected to become limiting in most stream segments. Invertebrate life is reduced, but not expected to become a limiting factor in fish production. Water quality and quantity should be good for fishing, boating and general recreation, especially with canoes, rubber rafts and smaller shallow draft boats. Stream esthetics and natural beauty will generally be satisfactory. (DNR Ex. 34, p. 368).

Based upon a 1979 survey report and field personnel's reports of feedback from recreational users, the Fisheries' personnel felt Tennant's "good" regime was the minimum that ought to be imposed upon the Clearwater. (Tr. VI, p. 120). The one change suggested was that the "spring-summer" protection should begin on March 1, rather than April 1. (Tr. VI, pp. 66-67). In further recognition of the existing wild rice industry, the Fisheries' personnel reluctantly agreed to the "share the shortage compromise" for drought periods, because they had heard that concept discussed in seminars on applying the Tennant method. (Id.).

71. A variation of the Tennant method, referred to as the "intensive" or "field" variation, requires measuring and photographing the stream stretch at

at least three different flow regimes. Ideally, these regimes would be 10 percent, 30 percent and 60 percent of average annual flow. Given the time and money required, when those flows were present personnel would gather data on fish distribution and abundance by species, age and habitat. They should also gather data on benthos and benthic conditions. Using this data, a more precise evaluation of the impact on fishery from different flows could be made than if the "office" Tennant method was used. (Tr. III, pp. 87-95). In order to utilize this "field" variation, however, it is necessary to either have an easily controlled stream (such as by a variable gate dam), or have a great deal of patience. The Clearwater Late Dam is not easily controlled, and the Department felt it could not further delay setting flows for the Clearwater. The Department therefore proceeded to apply the "office" Tennant method.

72. In addition to the Tennant method and its variation, there is a much more sophisticated methodology available for setting protected flows. This is known as the "incremental method". It was developed by the Cooperative instream flow Service Group, based in Fort Collins, Colorado. Its use is

'known. to]Department Fishery personnel. (Tr. VI, p. 37). The Department has tried to use it on the Mississippi and Minnesota Rivers. The Department started testing in 1978, began data collection in 1979, and is still working on it. To date it has cost more than 1250,000, but the protected flows have not yet been established. (Tr. III, p. 187).

73. The incremental method can be described as follows:

> This method is composed of four components:
> (1) simulation of the stream;
> (2) determination of the distribution and combinations of depths, velocities, substrates and cover objects, by area;
> (3) determination of a composite probability of use for each combination of depth, velocity, substrate and cover (where applicable) found within the stream reach, for each species and life history phase under investigation; and
> (4) the calculation of a weighted usable area .... for each discharge, species, and life history phase under investigation. (DNR Ex. 35, p. 1).

A key component to the use of the incremental method is Item 3 above, which is commonly referred to as "probability of use" data. The Cooperative Instream Flow Service Group is in the process of compiling and publishing such data. Work has been completed on northern pike and catfish, but not on walleye (Tr. III, pp. 108-109). Although it would be possible to make up a temporary set of data, it would be better to wait for the final data.

74. Given adequate time and financial commitment, and when probability of use data is complete, the incremental method is superior to the Tennant method. (DNR Ex. 36, pp. 43-44). However, it is likely that the incremental method will yield higher protected flows than the Tennant method with a "good" rating for the critical spring months at issue in this proceeding. (Tr. VI, p. 136; DNR Ex. 36, pp. 19 and 33). Therefore, in the context of this proceeding, the question becomes one of whether the Tennant method, as applied by the Department to the Clearwater River, is a reasonable method for setting protected flows. The Examiner finds that it is.

DEPARTMENT'S FINAL PROPOSAL.

75. As has been noted above, the Department's idea of what the protected

ought to be has undergone various "compromises". A final proposal is set

forth in DNR Ex. 39, and essentially provides that allocation will begin when

the flow is below 400 CFS, that 72 CFS will be the "target" or "preferred" flow, but that the actual protected flow will be 36 CFS.

The Department's final proposal is set forth, in pertinent part, below:

> "The minimum protected flow will be 36 CFS.
>
> "Allocation will provide 72 CFS for instream flow needs, so long as paddy needs can also be satisfied.
>
> 'Whenever and so long as flows and flow forecasts indicate to the Commissioner that paddy needs and 72 CFS cannot both be achieved, then allocation will scale down instream flow to tie extent necessary -- but not below 36 CFS -- to provide paddy needs."

76. The problem with this proposal, as with the earlier "compromise" proposal offered by the Department, is that there are no criteria or standards set forth to determine when the "drought standard" will be invoked (the drought standard is the scaling down from 72 to 36 CFS). Although the Department's final proposal comes closer than does its earlier one to specifying when the scaling down will occur, it is not specific enough. It was clear from the testimony that the Department has not yet settled upon a metnodology for invoking the "drought standard". There is no statute or rule Refining "drought". (Tr. VIII, p. 76). When asked what standard the Commissioner would use to determine when to invoke the drought standard, the answer was that he would use any predictive models that could be calibrated on a daily basis. 'Whatever is available at the time." (Reike, Tr. VIII, p. 78). Indeed, the Department is presently working on one model for use during February, March, April and the first part of May, but is working on a different model for June. (Tr. VIII, pp. 79-79). In addition to models, the Department intends to solicit input from Fisheries' personnel, the Watershed District, the Soil and Water Conservation District, and others (Tr. VIII, pp. 96-100). For example, the Fisheries' personnel believe that March is a critical month for maintenance of adequate amount of dissolved oxygen. This factor is not taken into account in the model under consideration. Depending upon the amount of dissolved oxygen in the river, Fisheries' personnel may or may not favor scaling down from 72 to 36 CFS. They would have an undetermined input into the decision of whether an& When to invoke the "drought standard".

77. Without greater specificity as to how the Commissioner's discretion will be exercised, it is impossible to determine that the drought standard portion of the final proposal is reasonable. For example, if the proposal stated that the predicted flow would remain at 72 CFS so long as the amount of dissolved oxygen was equal to or less than 5.0 mg/1 at the Plummer guage, that would be easy to evaluate. It would be a known standard. If the permit specified that so long as the Kuehnast Model predicted a total runoff of less than 40,000-acre feet (as suggested at Tr. VII, pp. 35-43), that would be a known standard. Bat without such specifics, and indeed without a firm idea of even what information would go into the decision, the growers are essentially left to the whim of the decision maker. Ps will be explained more fully in the Memorandum, persons are entitled to know the rules that will be applied to

them. And a permit such as this should spell out those rules so that decisions may be reviewed. For this reason, it is found that the proposed drought standard (specifically, paragraphs 4 and 5 of DNR Ex. 39) may not be imposed.

78. As is explained more fully in the Memorandum, the Department's final proposal thus becomes one for a protected flow of 36 CFS until it is further amended. The balance of this report will focus upon that protected flow.

IMPACT OF 36 CFS ON WILD RICE AGRICULTURE.

79. The growers cultivate approximately 9,500 acres of rice per year on

the acreage presently permitted by the DNR (Joint Ex. 6). On the average,

each acre yields 170 pounds of finished rice. This gives an average annual yield of 1,615,000 pounds. If one assumes, as the growers did, that rice is worth $3.50 per pound to growers (WRG Ex. 4), then it can be said that an average year's production is worth $5,652,500 to the growers.

80. Even if there were no protected flows on the river, there are some years in which growers would be unable to fill their paddies due to water shortage. Assuming that all 9,500 acres had been cultivated for each of the last 42 years of record (1940-1992), the growers estimate that 24,216 acres would have been lost due to lack of water, even without any protected flow (Tr. III, p. 158 and DNR Ex. 45). The Department, on the other hand, estimates that 6,275 acres would have been lost. If the growers are right, that would have meant an average annual loss of $343,060. If the Department is right, that would have meant an average annual loss of $88,896. Using the growers figures, that works out to an average annual loss (from optimum) of 6.1 percent. If tie Department's figures are right, natural losses result in losses of 1.6 percent from optimum. Both of those percentages are annual averages--they must be assumed to occur every year. Of course, there are many years in which they do not occur, but for purposes of comparison with the 5.6 million dollar figure, they have been annualized.

81. If a protected flow of 36 CPS had been in place since 1940, the losses attributable to that protected flow can also be calculated. Those losses would be in addition to the losses due to lack of water set forth immediately above. The growers estimate that the imposition of the protected flow at 36 CFS would result in the loss of 18,101 acres during the period of record. The Department estimates a loss of 9,005 acres. Again, assuming 170 pounds per acre and a value of $3.50 per pound, the average annual losses for 42 years work out to be $255,014 based upon the growers' computations, and $l27,571 based upon the Department's computations. Again, comparing that with the 5.6 million dollar figure for optimum case, the reductions attributable to the 36 CFS work out to be an additional 4.5 percent loss, using the growers' numbers, or a 2.3 percent average annual loss, using the Department's.

82. '.[he differences between the growers' numbers and the Department's numbers are based upon a number of differences which, in individual years, are small, but when compounded over 42 years, become larger. First of all, for the years since pumping by the growers began, the Department "added back" the pumped water to the flows recorded at Plummer in determining how much water was available. Secondly, when there was a lack of make-up water, the

Department assumed that partial yields were available. The growers assumed a total loss. Finally, the Department looked at year-by-year runoff, evaporation and seepage, while the growers used averages. This led to the conclusion, by the Department, that 30 inches are not needed every year. Some years, only 24 or some number in between 24 and 30 are needed. The Stipulation entered near the close of the hearing (Joint EX. 6) states that the growers must appropriate 23.2 acre-inches per acre on the average to initially fill. There was no stipulation with regard to how much make-up water was required, but six inches was a figure testified to by many of the growers, and one which the Examiner accepts.

83. There are no quantitative estimates of the impact of these percentage losses (whether they be 4.5 or 2.3) in the record. The record does contain qualitative evaluations, but many of them are based upon the Department's initial proposal of 72 CFS in the spring and summer and 36 CFS in the fall and winter (see Appendix B to growers' Post-hearing Reply Memorandum). however, one way to put it in perspective is to look at the increase in yields which would be required to make up for the losses due to a protected flow of 36 CFS. Using the growers' numbers, yields would have to increase from 170 pounds per acre to 177 pounds per acre. Using the Department's numbers, they would have to increase from 170 pounds per acre to 174 pounds per acre. These increases are miniscule when compared with the variation in yields resulting from other causes. For example, one grower testified that in 1981 he got 130 or 135 pounds per acre. In 1982, he got 190 pounds per acre. Since there is work being done on new seed varieties and farming practices, and since the growers are continually improving their fields, there is no reason to believe that the average yield per acre cannot soon top needed to make up for these losses due to the 36 CFS protected flow.

84. The record would have been considerably improved if the growers had been willing to disclose their profit margins. They were unwilling to do so. Even the manager of the Cooperative that many of them belonged to, United Wild Rice, refused to say how much per pound the Cooperative returns to its members. (Tr. IV, pp. 25-26). While such reticence is perhaps understandable in a public forum, proctective orders and other devices could have been employed to get a more accurate understanding of the impact of the protected flow on the growers. Nonetheless, there is adequate information in the record to conclude that the imposition of a 36 CFS protected flow will not substantially adversely affect the growers.

85. A great deal of heat was generated over the $3.50 per pound figure assumed by the growers (WRG Ex. 4). While the ultimate "profit" depends on the selling price (which, in turn, varies with production, including competition from California and elsewhere), it is found that on the average it does cost $3.50 per pound to raise, process, package and sell wild rice if certain assumptions are made regarding the price of land. land costs and carrying costs vary tremendously among the growers. In spite of the inability to be more precise, $3.5O does represent a reasonable average fully distributive cost. Since a large percentage of a farmer's costs are incurred either as fixed costs, or in the fall (before the next season's water availability can be predicted), there are only minor savings to be gained from

deciding not to flood or harvest an acre. In fact, far more money is lost if an acre cannot be flooded than is saved by not having to pay for the flooding or the harvesting.

IMPACT OF 36 CFS ON OTHER ENTITIES DEPENDENT ON GROWERS.

86. Wild rice agriculture has become an important part of the economic fabric of the Clearwater area. Since the closing of Arctic Enterprises' plant in Clearbrook, there have been no major non-egricultural industries in the area. Ironically, Arctic's Clearbrook facility is now owned by United Wild

Rice and used as a processing plant. Wild rice agriculture is important to the county, the school district and townships. It is also important to service industries which supply energy, machinery, etc., to the growers. It is also important to the small businesses in the towns which sell groceries, hardware and numerous other items to the growers and their employees.

However, based upon the analysis in the preceding section, the testimony on these impacts will not be reviewed in depth. Much of the testimony was based upon the earlier proposal for 72 CFS and 36 CFS. Most of it, in fact, was based upon an assumption that the imposition of those protected flows would have a substantial adverse impact on the growers. Those assumptions have been found inapplicable. The imposition of 36 CFS will not have a substantial adverse impact upon any of the entities that depend upon the growers.

IMPACT OF 36 CFS ON THE FISHERY.

87. The Clearwater River in the area of interest exhibits substantial variation in flows, regardless of whether the figures are looked at on an annual, monthly, weekly or even daily basis. While averages are extremely useful, they obscure the substantial natural variations. Variation is important for the maintenance of both physical and ecological characteristics of a river. The imposition of a 36 CFS protected flow does not mean that the river will flow at a constant flow of 36 CFS for any period. Rather, it means that the river will not go below 36 CFS at any time, unless it would have done so for natural reasons, regardless of the growers' pumping.

88. While the impact on the fishery of wild rice agriculture is negative during the months of May and June, that negative aspect is balanced out by positive impacts during the rest of the year. This can be seen from the following table, which illustrates the difference between average mean monthly flows in the pre-ricing period and in the post-ricing period. 1971 was chosen as the cutoff. While it could be argued that 1972, 1973, or even 1974 might be preferable, 1971 is found to be adequate for purposes of this illustration. The following numbers show the difference, in CFS, between the mean monthly flows at Plummer for the period 1940 to 1971 and 1971 to 1982.

January	17.52	July	31.76
February	12.46	August	58.56
March	19.34	September	45.61
Apr i 1	112.80	October	60.04
May	-138.64	November	65.78
June	-185.40	December	23.98

(Source: WRC Ex. 25)

As the above data indicates, growers were responsible for adding water to the river during the late summer months when flows are particularly low. In fact, due to seepage, tiling and draining, growers do tend to even out the flow in the river. 'Even their appropriations in the springtime tend to even this flow; and despite their appropriations, the mean monthly flows for the period 1971 to date (When ricers have been appropriating) are 117 CFS in

March 674 CFS in April, 277 CFS in May and 129 CFS in June. These flows are still the highest of the year, and do show good variation from month to month. This is particularly significant in light of the fact that the most critical time, from the standpoint of BUR Fisheries' personnel, is the spring spawning season.

Averages, however, do obscure the impacts of dry years. It will be recalled that the Fisheries' personnel initially favored setting protected flows at the median monthly flows, but were willing to accept 72 and 36. DNR's final proposal, of 36, does represent less than ideal conditions for the Fishery. (Tr. VI, p. 82). 36 CFS is a compromise made in order to "share the shortage" with an industry that is already in place. (Tr. VI, p. 67). If the alternative is to manage the fishery without the industry in place, then the fishery would be threatened with lower flows in the late summer. The compromise of 36 CFS is reasonable. Based on what is presently known, it will not impair or destroy the fishery.

0THER INSTREAM NEEDS .

89. The record contains evidence of otner instream uses of the river, including recreation, navigation, aesthetics and waste water dilution. There -are no higher priority users located in reasonable proximity to the site of the appropriation.

90. With regard to recreation, 36 CFS is marginal. Again, however, the averages obscure important periods for recreation. It is equally important for recreation that the growers are adding water to the river in August, despite the fact that they are taking it out of the river in May.

Recreational uses of the river include swimming, canoeing, camping, picnicking, and appropriations for golfing. Depending on temperature, many of these activities could start in May. They would definitely be operational in June, July, August, and perhaps September. During May and June the growers are detrimentally impacting these activities, but during July, August and September they are favorably impacting them. All of these activities are enhanced when the water level is reasonably high, at least 150 or 200 CFS. During the two crucial months of May and June, during the post-ricing period, the median monthly flows were 277 in May and 129 in June. Both of these figures are reasonable figures for recreational activities. 36 CFS is not a reasonable level for these activities. In general, it can be said that if recreational activities were the only considerations in setting a protected flow, it would be set significantly higher than 36 CFS. The trade-off, however, is that approximately 50 CFS are added to the river during the later summer months as a result of the growers' activities.

91. Navigation on the river consists solely of recreational canoeing.

There are no reliable figures in the record indicating the levels necessary to support canoeing, but 36 CFS is not adequate to support canoeing. The kinds of flows that would support canoeing are in the areas above 200 CFS, depending upon the specific location on the river. (See Depth Calculations in DNR Ex. 15). If canoeing were to be the sole determinant of the protected flow, it should be set substantially above 36 CFS, in the range of 200-300 CFS.

92. Aesthetics are generally improved at reasonably high flows. For example, a Plummer resident felt that a flow of 78 CFS was too low from an aesthetic standpoint (Tr. II, p. 53). The mayor of Plummer testified that 72 CFS was not high enough from an aesthetic standpoint (Tr. II, p. 35). At 36 CFS, aesthetics are definitely impaired.

93. Finally, waste water dilution must be considered. The Plummer treatment lagoon is discharged into the river in May and again in the fall. The Minnesota Pollution Control Agency requires a minimum flow to accept the discharge of 17.2 or 17.3 CFS (Tr. II, pp. 32-33). Therefore, 36 CFS is adequate for this purpose.

ALTERNATIVES

94. There were a number of alternatives to imposing a protected flow which were discussed at hearing. These included channeling water from the Red Lake River to the Clearwater River, using Clearwater Lake as a reservoir, developing other impoundments along the river, fall flooding, increased pumping capacity, diversion of acreage to other crops, fallowing acreage in dry years and using wells or other ground water sources.

95. The use of wells or other ground water sources received little attention. The only individual who mentioned it, a Legislator familiar with local conditions, opined that ground water sources are already being overdrawn in the area (Tr. I, p. 74).

96. The alternative of a diversion channel from Red Lake or the Red Lake River has been recently discussed. The Department believes that it would be politically impossible to achieve if the Department were to attempt to implement this alternative, but that the Fed Lake Watershed District might be able to make more headway with it. In any event, it is a long-range alternative (Tr. VIII, pp. 39-40).

97. Storing more water in Clearwater Lake was also considered by the Department. Raising the elevation of the lake by ten feet would flood "a lot of homes" (Rieke, Tr. VIII, p. 37). If the lake were raised one foot, it would store approximately 1,000 acre-feet of water. While this is a small amount in light of the 18,400 acre-feet needed to initially fill the paddies (joint Ex. 6), it is a meaningful amount in light of the June make-up requirements. While an aerial photograph illustrates houses very near the shoreline (DNR Ex. 6-1), the impacts and cost of storing 1,000 acre-feet by raising the lake level one foot are not known at this time. (But see Tr. VIII, p. 38).

98. Increasing the growers' pumping capacity becomes a matter of diminishing returns. For example, during the critical month of June, there are only four years out of the last 42 where pump capacity greater than 400 CFS would be of help. In light of the substantial cost of pumps the few years of advantage are outweighed by the cost (Tr. VIII, p. 147).

99. Permanently diverting acreage to other crops is problematical in light of the high peat content in many- of the soils. Peat creates drainage problems for small grains, but more importantly, it is very nitrogen-rich.

This results in very prolific and very high-stalked grains. These abnormal

plants are difficult to harvest. (Tr. IV, p. 88). Small grains are considered a marginal use of the land, while wild rice agricultural constitutes its best agricultural use (WRG 15, p. 2; Tr. IV, pp. 78-79).

100. If growers knew a dry year was coming, then they would still try to flood the fields with a minimal amount of water in order to avoid weed problems.

101. A final alternative discussed was fallowing land in dry years. The overall cost for taking a paddy out of production for a year is greater than flooding it. This is particularly true in light of the fact that it usually is very difficult to predict whether or not it would be possible to use the land for wild rice until the springtime, and most of the costs have already been incurred by the time that a grower learns he may have to fallow the land. Minimal flooding at least controls water plantain, a common weed problem for wild rice growers. (Tr. VITI, p. 157).

102. One "alternative", which was not discussed as such, is improved predictive abilities so as to capture the maximum amount of water when it is available. If there is plenty of water in the river, and the growers are allowed to pump at full power all of the time, it would take less than two weeks to fill the paddies. If it were possible to predict with greater accuracy when high flows would occur, then the growers could maximize their pumping during those periods. (Tr. III, pp. 151-152).

103. Fall flooding, while limited by water availability, is an alternative worth maximizing. The growers can reduce their spring pumping requirements by doing some of their filling in the fall, after they are done working the fields. While there are constraints imposed by the river's limited flow during the fall (Tr. I, p. 136), at least some water is available for pumping. This approach is wasteful, in a gross sense, because some of the water pumped in the fall does seep downward during the winter. But in the case of the Clearwater, at least one way to accommodate both the growers and instream needs, is to spread the pumping over as long a period as possible, consistent with maintaining a protected flow during the fall. In November, it is virtually impossible to predict whether the next spring's flow will be adequate for the growers to pump all that they need. Therefore, fall pumping can act as a partial "insurance policy" against a dry spring.

104. Fall pumping does detract from the flood control impact which the growers' appropriations have on the Clearwater River, the Red Lake River and the Red River of the North. However, the amount of water available for fall pumping is so limited that it is reasonable to encourage fall pumping despite this potentially adverse impact on the next spring's flooding.

Based upon the foregoing Findings, the Examiner makes the following:

CONCLUSIONS.

1. The Department gave proper notice of this hearing. Both the Department and the Examiner do have jurisdiction to decide this matter.

2. The Department did comply with all other provisions of law or rule.

3. Adequate data are available to allow the Commissioner to limit consumptive appropriations during periods of specified low flows in order to safeguard water availability for instream uses.

4. The Commissioner has encouraged appropriation and use of surface water from streams during periods of flood flows and high water levels.

5. The Commissioner did properly consider the factors listed in 6 MCAR 1.5052 A, as applicable, in proposing a protected flow of 36 CFS for the Clearwater River between the Clearwater Lake Dam and the mouth of the river.

The Commissioner is authorized to modify or amend existing permits to establish a protected flow.

6. The proposed permit condition which would have authorized the setting of a "target" protected flow of 72 CFS, to be scaled down to 36 CFS when the Commissioner determines that paddy needs could not be met at 72 CFS, without further articulating the standards or criteria to be used in making the determination, constitutes an impermissibly vague permit provision. (See Memorandum.

7. The appropriation permits at issue in this proceeding are "permits for natural resources management and development" as that term is used in Minn. Stat. 116D.04, subd. 6 (1982).

8. Failure by the Commissioner to include a protected flow in the permit amendments would constitute conduct which "is likely to materially adversely affect the environment", as that term is used in Minn. Stat. 116B.02, subd. 5 (1982).

9. Failure of the Commissioner to include a protected flow in these permits would constitute "destruction" of the water resources located within this State. Including a protected flow of 36 CFS in the permits is a "feasible and prudent alternative consistent with the reasonable requirements of the public health, safety, and welfare and the State's paramount concern for the protection of its ... water ... from ... destruction," within the meaning of Minn. Stat. 116D.104, subd 6 (1982). Therefore, the Commissioner is prohibited from issuing permits without a protected flow.

Based upon the foregoing Conclusions, the Examiner makes the following:

RECOMMENDATIONS

That the permits for consumptive appropriations from the Clearwater River be amended to include a protected flow of 36 CFS.

Bated this 2nd day of December, 1983.

ALLAN W. KLEIN
Hearing Examiner

NOTICE

Pursuant to Minn. Stat. 14.62, subd. 1 (1982), the agency is required to serve its final decision upon each party and the hearing examiner by first class mail.

Reported: Janet Shaddix and Associates.

MEMORANDUM

I.

This proceeding was the first hearing ever held to set a protected flow. It was longer and more complex than future ones need to be because neither party was exactly certain of just what had to be proved. Hopefully, this proceeding has answered some of the questions, and has yielded precedents which will shorten future protected flow hearings.

One of the most important precedents from this case is the idea that the statutes and rules are orientated in favor of setting protected flows. They are not "neutral" on the question of Whether protected flows are a good thing. Father, they affirmatively mandate their establishment under certain circumstances. This is illustrated by the central statute at issue, Minn. Stat. 105.417, subd. 2, which provides that appropriation permits shall be limited to prohibit appropriations in order to safeguard instream uses.

In addition to that statute, another law definitely favores the protection of the river. Minn. Stat. 116D.04, subd. 6, prohibits the Department from issuing any permit if its issuance is likely to cause 'pollution, impairment or destruction" of a natural resource such as the river, so long as there is

an alternative course of action that will protect the resource. In this case, there is an alternative available. It is the issuance of permits Which do provide for a protected flow that will protect the river.

This proceeding has established the precedent that these statutes (and the rules adopted to define their application) can be used to justify the setting of protected flows, even when those flows will result in economic harm to appropriators. Indeed, Minn. Stat. 116D.04, subd. 6, provides that economic considerations alone cannot be used to allow the destruction of a river.

These legal precedents also reflect what the growers themselves understand and desire. The growers do not believe that they can pump the river dry. As one of them stated:

> 'Well, I think all of the rice farmers are fishermen too, believe it or not. I guess always when there was no minimum flow, we always tried to maintain one ourselves to a certain extent."
>
> (Tr. V, p. 123)

Another ageeed with the witnesses from Plummer and Red Lake Falls that they are justified in expecting a reasonable flow in the river. He said . ..... It is right that wild rice growers should not be the cause of the river drying up." (Tr. IV, p. 151).

Therefore, the growers intuitively understand what the statutes and rules make explicit: Persons who appropriate cannot be allowed to destroy the river. The establishment of a protected flow only formalizes this principal.

II.

The Department's final proposal contained a "target" protected flow of 72 CFS, but the actual protected flow would be 36 CFS. Under this plan, the staff would allocate water as if 72 CFS were the protected flow, but if that proved to be inadequate to meet the growers' needs, then the allocations would be increased to try to meet the growers' needs. In no event would the allocations allow the river's flow to go below 36 CFS.

The staff's goal is laudible. The fishery is better served by 72 than by 36. Other instream uses, such as recreation and aesthetics, are marginally better off with 72 than with 36.

The problem with the final proposal is that the staff is not yet sure how and when it would decide to increase allocations. They have ideas regarding most of the factual issues that would go into the decision. They are actually quite close to knowing just how and when the decision will be made, but they still have uncertainties. They need more time to resolve the remaining questions.

Once the uncertainties are resolved, it will be possible to again amend the permits to include the details of how and when the "scaling down" decision will be made. In other words, the decision reached in this proceeding does not foreclose the Department from achieving its goal in the future, once it is known just how the plan will operate.

A.W.K.